Degradation of Pastures in Mongolia: Challenges and Perspective

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Introduction The total territory of Mongolia encompasses 156 .4 million hectares ,of which 72% are utilized as pasture land , supporting nomadic herding . The livestock sector contributes about 20% to the GDP ; 80% to the Gross Agricultural Product and provides work for 1/3 of the total labor force .

Materials and methods Findings from research carried for the last 65 years in Mongolia on the condition of pastureland ,climate change ,numbers and composition of livestock and on their interrelation have been reviewed and analyzed .

Results and discussion In 1934-2006 the number of livestock increased by 50% . Especially the number of goats has increased steadily since 1991 reaching 16 million head in 2007 . . The livestock sectors share in GDP increased over the last years in absolute numbers because of the increase in livestock numbers . Up to 1960 the pasture carrying capacity was underutilized . However ,the carrying capacity of pastures was exceeded by 40% in 1990-2006 .

Table 1 *Changes in pasture land area ,number of livestock and production of meat and cashmere .*

Years	1934-1959	1960-1990	1991-2006	2007
Pasture ,mln . ha	140 .5	132 .0	121 .3	113 .5
Number of livestock ,mln . Head as cow units	8 .4	8 .3	9 .1	10 .7
% of sheep / goats of total	26 .7/8 .6	27 .5/8 .2	25 .2/16 .0	25 .5/25 .2
Meat produced per year ,1000 tons	134 .2	200 .0	228 .8	Not available
Cashmere produced per year ,tons	890 .1	1158 .8	3092 .4	4000 .0

From 1940 to 2005 the average air temperature increased by 1 .56℃ and annual precipitation decreased by 8 .7-12 .5% in Central and Gobi regions . (L .Natsagdorj ,2006) . However ,people over utilize water without managing this natural resource in a sustainable way ,lead to deterioration of water supply caused by the strong concentration of livestock near rivers ,canals and other watering places ,violations of the traditional 4-seasonal pasture rotation (livestock breeders mainly use bi-seasonal rotations : winter-spring and summer-autumn) ,heavy concentration of herders families in the vicinity of populated areas ,large areas of abandoned cropland . As a result currently about 70-80% of pastureland is degraded to some extent ,the yield of standing mass per ha decreased by 40% and the number of species by two folds (D . Avaadorj *et al* . ,2001) .

Table 2 *Decrease of pasture yield % (Avaadorj D . et al . ,2006) .*

Years	1961-1962	1981-1982	2002-2003
Forest steppe	100	72 .3	48 .2
Steppe	100	70 .6	48 .0
Desert steppe	100	71 .1	64 .4
Desert	100	81	71 .4

Conclusions The degradation of pastures in Mongolia is connected with the climatic changes ,contradiction between the common ownership of pasture land and private livestock sector . There is a need to develop a mechanism for regulation of the livestock number in accordance with the potential carrying capacity of pastures .